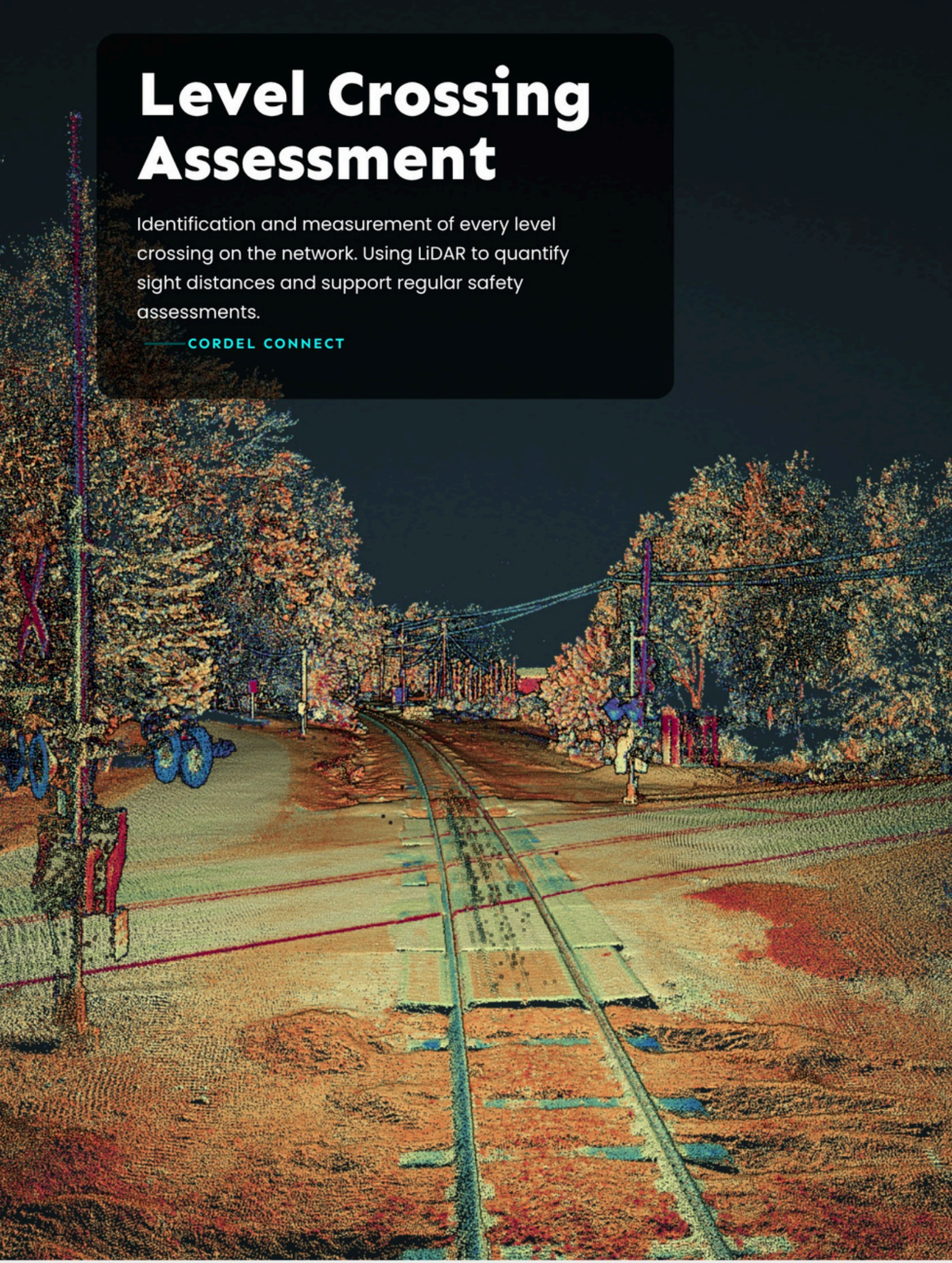
Level Crossing Assessment

Identification and measurement of every level crossing on the network. Using LiDAR to quantify sight distances and support regular safety assessments.

CORDEL CONNECT



Information

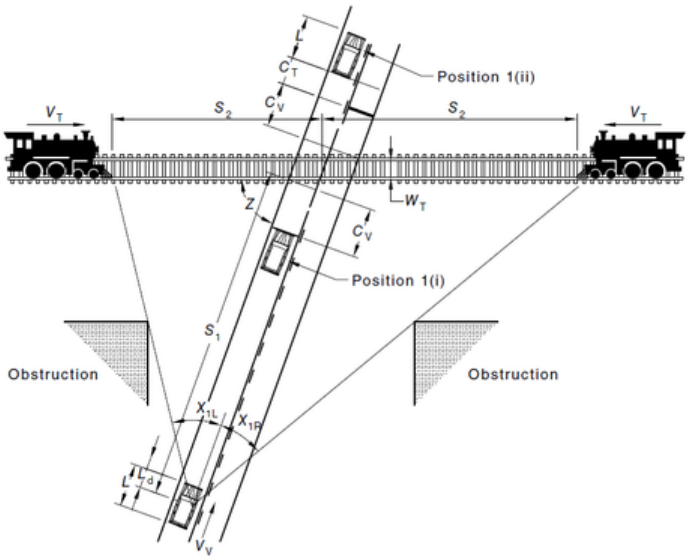
Summary

The Cordel Level Crossing Assessment solution identifies where level crossings exist within the rail network and provides key risk-assessment information for each crossing, including sight distances, sight-line encroachment, terrain changes, crossing angles, and surface type.

By delivering more consistent, frequent data, the solution lets rail networks replace manual sight-distance inspections and outdated records, undertake risk assessments more robustly, and prioritise high-risk crossings for investigation, maintenance, or upgrade.

Key level crossing measurements

Field	Details	Availability
SSD	Stopping Sight Distance – distance from the crossing to the point on the road from which crossing control devices must be visible. Mathematically equivalent to S1, applies to all crossing control types.	Client supplied or Cordel inferred
S1	Distance from the nearest rail to the point on the road from which a driver must have a clear view of an approaching train to perceive, react, and stop before the crossing. S2 measurements are taken from this point.	Could be produced
S2 (left / right)	Minimum distance along the track at which an approaching train must be visible to a driver at the S1 point, so the driver can react and clear the crossing safely at speed.	In Production
S3 (left / right)	Minimum distance along the track at which an approaching train must be visible to a driver stopped at the stopping point, so the vehicle can start off and clear the crossing before the train arrives. Calculated using a driver eye height of 1.05m (cars) and 2.4m (trucks), measured 1.5m behind the road stop line.	In Production
Sight angles (left / right)	Angle between the stop line and the approaching rail vehicle, measured from the stop line.	Could be produced
Direct sight distances (left / right)	Straight-line ("as the crow flies") distance, in metres, between the stopping point and the approaching train.	In Production
Z	Angle of road from the edge of track.	Could be produced
Wr	Width of road.	Could be produced
Wt	Width of track (outer rail to outer rail).	Could be produced
X2L / X2R	Angle to train, left / right - measured from the vehicle.	In Production
Cv	Distance from front of vehicle to edge of crossing.	Could be produced
Gs	Gradient of crossing (m/m).	Prototype
Crossing type	Surface type (bitumen, gravel, steel deck, etc.).	Client supplied or Cordel inferred



Key level crossing safety measurements

How does this solution work?

Cordel ingests existing LiDAR data in conjunction with rail-captured, road-captured, or satellite imagery — into the Cordel Connect platform, providing access to multiple agencies. Raw LiDAR and video are processed through Cordel's AI pipeline to identify level crossings and extract key risk-assessment measurements for each site, including:

- The geospatial location
- Sight distance calculations (S2 and S3, left and right).
- The distance from a rail vehicle at the crossing to a road vehicle stopping point.
- The distance from a road vehicle stopping point to the closest rail.
- The angle to an oncoming rail vehicle from a stationary road vehicle.
- Terrain data and crossing surface type (bitumen, gravel, steel deck, etc.).

Outputs are delivered as structured data files and visual reports, enabling clients to make informed decisions about crossing safety. Parameters such as maximum sight angle, maximum sight distance, driver eye height, train height, and S1 (stopping distance) are configurable to suit client requirements.

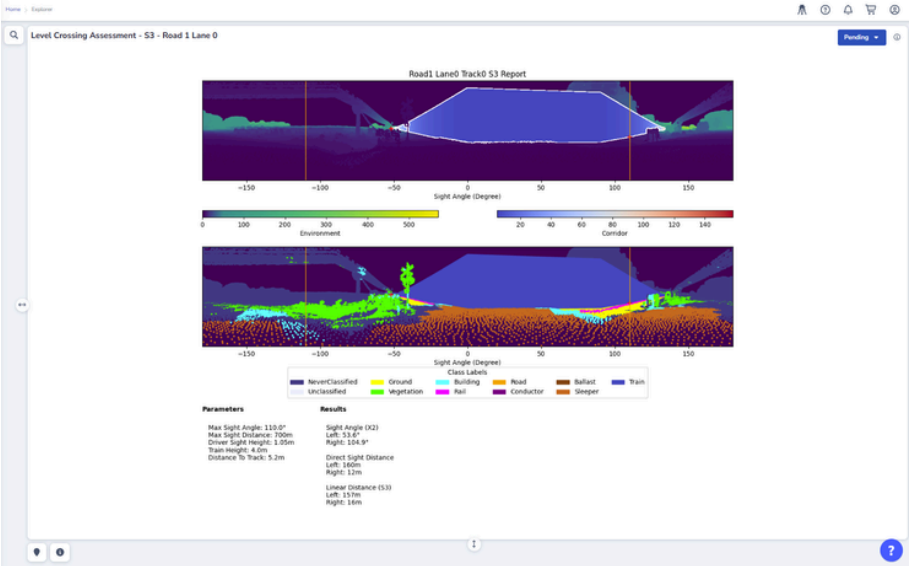
Level Crossing Payload Data

.PNG image files

Each level crossing is presented as a series of images depicting the environment, the corridor, and the corresponding sight distances. Each road traffic lane produces an S2 (left and right) and S3 (left and right) image — typically four images per crossing (two lanes × S2/S3), although this varies depending on the number of lanes and tracks. Level crossing assessment .PNG files are also attached to level crossing map markers in Explorer.

Each image shows:

- The classified level crossing scene.
- The maximum sight angle, plotted as orange lines (one to the left, one to the right).
- Sight angles, direct sight distances, and linear sight distances (S2 and S3) for left and right.
- Depth within the environment and corridor, represented using colour scales.
- A red "+" marking the sight distance (S2 or S3, left or right) from a stopped car to an approaching train.



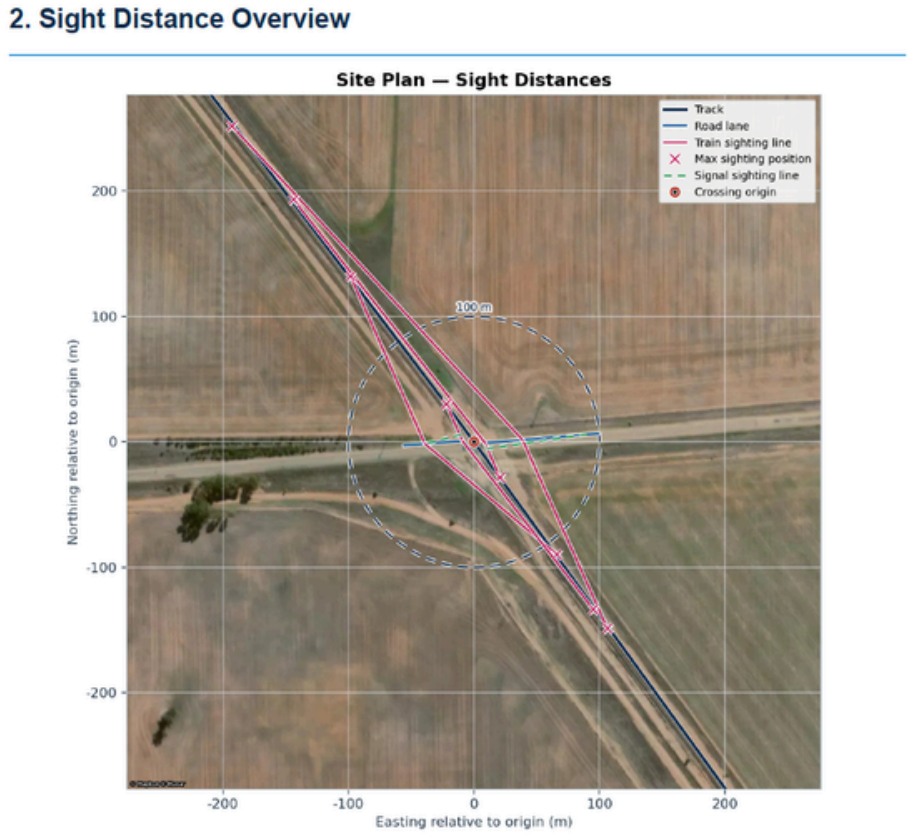
Level crossing .PNG image

Level Crossing Sighting Assessment Report

Assesses driver and pedestrian sightlines at a level crossing, measuring how far a train can be seen from key approach and stopping positions on each road lane

Report contents:

- Site overview — crossing location, Cordel Explorer link, and the analysis parameters used (driver eye height, train height, maximum sighting angle, maximum sighting distance)
- Site plan — plan view of the crossing showing track centrelines, road/pedestrian paths, S1 and stop key points, and primary control (sign) position, plus a reference site photo
- Sight distance overview — a site-wide plan showing every measured sighting line across all assessed lanes
- Per-road, per-lane results, for each assessed lane
- Distance from the S1 (approach) point to the track, and from the stop point to the track
- Primary control (sign) maximum sighting distance
- Measured sighting results table: linear distance, direct (line-of-sight) distance, and sighting angle, to the left and right, for two assessment positions — S2 (approach) and S3 (stopped)
- Sight distance map (site imagery with sighting lines and measured distances labelled)
- Primary control sighting map (furthest point on the lane from which the sign is visible)
- Sighting profile plots for S2 and S3, plotting sight angle against distance



The Site Plan provided in the Cordel Level Crossing Sighting Assessment Report

Visual Tools

LiDAR Viewer

Users are able to interrogate the LiDAR point cloud using the Cordel Connect LiDAR Viewer, allowing for visual verification of sight lines, terrain, and surrounding obstructions.



A level crossing shown in the Cordel LiDAR Viewer

Forward Facing Video

Forward-facing video captured from rail or road vehicles can be reviewed alongside the LiDAR data, providing visual context for each crossing as it appears to an approaching driver.



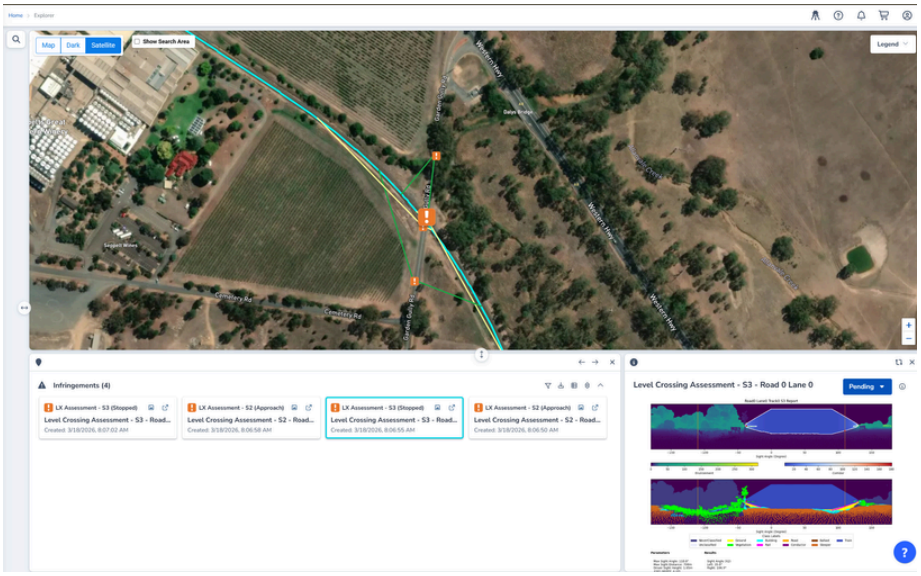
Forward Facing Video showing a level crossing in the Mission Viewer

Map Markers

Detected level crossings are surfaced as map markers on Explorer and within Mission Viewer, allowing users to navigate directly from a location on the network to the supporting payload data and visual reports.

Explorer

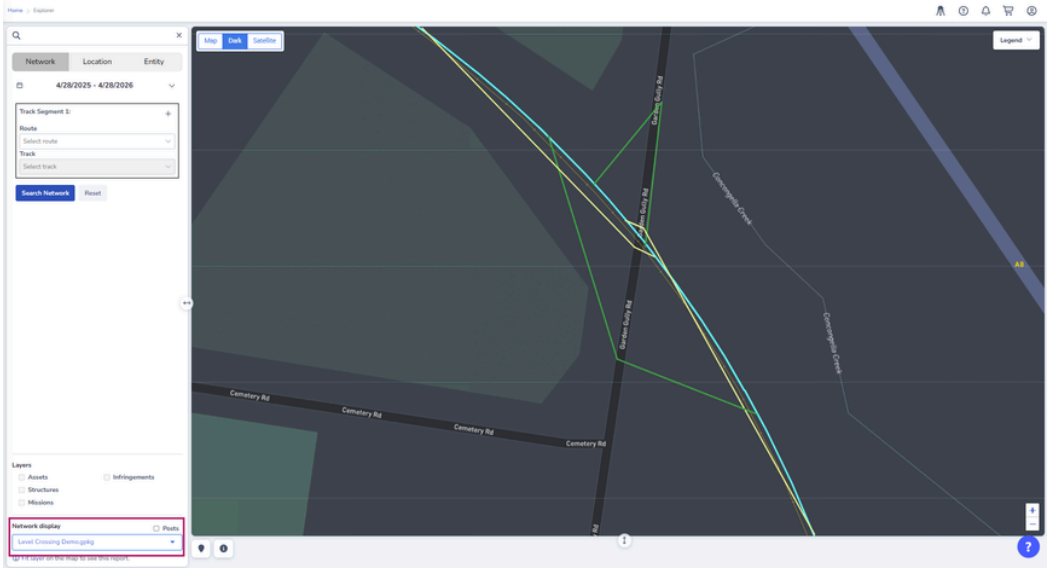
Explorer presents level crossings spatially across the network. Users can filter by attributes such as crossing type or risk indicators and click through to a crossing's full record. Each level crossing and its sightlines are aligned geospatially on the network, and show visual sight information as a .PNG in the preview window by default.



A level crossing shown in Explorer with map markers identifying S2 and S3 points

Map Layers: GPKG

GeoPackage (.gpkg) layers can be uploaded to Cordel Connect, enabling crossing locations and key attributes to be displayed on Explorer alongside other network data.



A .GPKG file loaded into Cordel Connect, displayed on Explorer

Ticket Details

Selecting a map marker or sightline opens a detail view containing the crossing's location, measured sight distances (S2 and S3, left and right), sight angles and positional information.



Level crossing details are displayed when a user clicks the sight lines in Explorer